MATERIALS TESTED AS CARRIERS FOR AIR APPLICATION OF GRANULATED WETTING AGENTS.

Materials Tested	Volume Percent of Wetting Agent Concentrate	Bulk Density of Mix	Relative Rate of Release of Wetting Agent Concentrate to Control	Granule or Particle Size
1) Perlite Coated With Micro-cell	20	0.35	2.7	1.0–2.0 mm.
2) Perlite	10	0.22	2.3	1.0–2.0 mm.
3) Micro-cell	25	0.43	3.8	0.1 μ
4) Diatomaceous Earth	10	0.24	1.4	1–50 μ
5) Redwood Sawdust Coated With Micro-cell	25	0.47	2.0	1.0–2.0 mm.
6) Vermiculite Coated With Micro-cell	17	0.33	2.5	1.0–2.0 mm.
7) Rice Hulls Coated With Micro-cell	8	0.29	2.6	2.0–7.0 mm.
8) Calcined Clay	20	1.40	1.7	0.5–2.0 mm.

Carriers for Air Application of GRANULATED WETTING AGENTS

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Tests show that a number of inert, porous, non-toxic powders and granulated materials provide suitable carriers for concentrated wetting agents. The application of powdered or granular forms of wetting agents by plane or helicopter appears feasible. Local applications by mechanical spreaders and hand-dusting equipment are also possible.

THE USE OF COMMERCIAL wetting agents has been recognized for the treatment of nonwettable soils to increase infiltration rates of water, to provide deeper penetration, and to decrease runoff and subsequent soil erosion. In most agricultural areas the wetting agent is distributed by mixing with the irrigation water. Small areas can be sprayed directly with the wetting agent solution or hand watered.

It has recently been observed that large areas of watershed in southern California have soils exhibiting hydrophobic properties and that treatment of these soils with wetting agents caused a marked reduction in water runoff and soil erosion. The treatment of large areas in rugged terrain by the use of wetting agent solutions appears prohibitive from a logistic and cost-of-application viewpoint. The application of one gallon of wetting agent concentrate would require transporting from 1,000 to 4,000 gallons of water. The need for treating these large inaccessible areas suggested the air application of concentrated wetting agents using porous powders and granulated materials as carriers, depending on natural rainfall to release and distribute the wetting agent concentrate.

A desirable carrier would be one which would (1) allow a low ratio of the carrier volume and weight to the wetting agent volume and weight, (2) maintain a flowable mixture, and (3) allow rapid and complete release of the wetting agent when watered. To a certain extent, these properties would be influenced by the choice of wetting agent. It is important to use a wetting agent with a high percentage of active ingredient which is released by the carriers.

Several materials were tested for their effectiveness as carriers, based upon the criteria listed (see table). Some of the materials were coated with micro-cell after incorporation with the wetting agent to prevent caking and facilitate flowability.

The choice of a carrier to use would depend upon its cost and availability and upon the premium which is placed on having a low volume or weight mix. For example, if the weight of the material was critical, calcined clay would be a poor choice because of its high bulk density as compared to the other materials. Rice hulls would be a reasonable choice if one wanted low weight, but a higher volume would have to be delivered to get treatment comparable to the other carriers.

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